

Title (en)

Process for decoding ALAMOUTI block code in an OFDM system, and receiver for the same

Title (de)

Verfahren zur Decodierung von ALAMOUTI-Blockcodes in einem OFDM-System und Empfänger für das Verfahren

Title (fr)

Procédé pour le décodage du code de bloc ALAMOUTI dans un système OFDM et récepteur correspondant

Publication

EP 2315404 A1 20110427 (EN)

Application

EP 09368041 A 20091026

Priority

EP 09368041 A 20091026

Abstract (en)

1. Process for decoding a signal being representative of a Space Time or Frequency Block coding during two signaling periods (STBC) or two parallel channels (SFBC), comprising: - receiving an OFDM signal received from at least one antenna; - performing an OFDM demodulation in order to generate N frequency domain representations of said received signal, each associated to one carrier; - performing a decoding process applied on said OFDM demodulated signal, in order to group the received signal in word code $Y = (y_1, y_2)$ being representative of the received signal received during two signaling periods (STBC) or two parallel channels (SFBC); - decoding said word code $Y = (y_1, y_2)$ in order to compute the transmitted symbols x_1 and x_2 in accordance with the following formulation: $y_1 y_2^* = h_1 h_2 h_2^* - h_1^* h_2^2$ # $x_1 x_2 + n_1 n_2^*$ The process further comprises the steps of - applying a lattice reduction algorithm on said matrix $H = (h_1, h_2)$ in order to transform said matrix in a reduced matrix $H_{red} = (b'_1, b'_2)$ having vector being close to orthogonal; - performing a detection process on said reduced matrix in order to improve immunity with respect to noise and interference.

IPC 8 full level

H04L 25/03 (2006.01); **H04L 1/06** (2006.01); **H04L 27/26** (2006.01)

CPC (source: EP US)

H04L 1/0606 (2013.01 - EP US); **H04L 1/0631** (2013.01 - EP US); **H04L 25/03006** (2013.01 - EP US); **H04L 27/2647** (2013.01 - EP US); **H04L 1/0668** (2013.01 - EP US); **H04L 5/0007** (2013.01 - EP US)

Citation (applicant)

- US 2006215773 A1 20060928 - JEON WON G [KR], et al
- XUE WEN ET AL.: "LLL lattice reduction-based detection of joint VBLAST and SFBC in MIMO/OFDM systems", COMMUNICATIONS, CIRCUITS AND SYSTEMS, vol. 1, 27 May 2005 (2005-05-27), XP010827200, DOI: doi:10.1109/ICCCAS.2005.1493391
- HUAN YAO ET AL.: "Lattice-reduction-aided detectors for MIMO communication systems", GLOBECOM'02, vol. 1, 17 November 2002 (2002-11-17), XP010635986, DOI: doi:10.1109/GLOCOM.2002.1188114

Citation (search report)

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- [A] US 2006215773 A1 20060928 - JEON WON G [KR], et al
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- [XYI] XUE WEN ET AL.: "LLL lattice reduction-based detection of joint VBLAST and SFBC in MIMO/OFDM systems", COMMUNICATIONS, CIRCUITS AND SYSTEMS, vol. 1, 27 May 2005 (2005-05-27) - 30 May 2005 (2005-05-30), PISCATAWAY, NJ, USA, IEEE, pages 194 - 198, XP010827200, ISBN: 978-0-7803-9015-7
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- [A] DI WU ET AL.: "A Programmable Lattice-Reduction Aided Detector for MIMO-OFDMA", CIRCUITS AND SYSTEMS FOR COMMUNICATIONS, 2008, 26 May 2008 (2008-05-26), IEEE, PISCATAWAY, NJ, USA, pages 293 - 297, XP031268702, ISBN: 978-1-4244-1707-0

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Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR

Designated extension state (EPC)

AL BA RS

DOCDB simple family (publication)

EP 2315404 A1 20110427; JP 2013509060 A 20130307; JP 5734990 B2 20150617; US 2012269302 A1 20121025; US 8842755 B2 20140923; WO 2011050935 A1 20110505

DOCDB simple family (application)

EP 09368041 A 20091026; EP 2010006508 W 20101025; JP 2012534585 A 20101025; US 201013504103 A 20101025